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on

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT  
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)**

Docket Number (Optional)  
5000-1-363

First named inventor: Sung-Kee Kim

Application No.: 10/600,685

Art Unit: 2613

Filed: June 20, 2003

Examiner: Kenneth J. Malkowski

Title: DUOBINARY OPTICAL TRANSMISSION APPARATUS AND METHOD THEREOF

Attention: Office of Petitions  
**Mail Stop Petition**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact Petitions Information at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the office notice or action plus an extensions of time actually obtained.

**APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION**

NOTE: A grantable petition requires the following items:

- (1) Petition fee;
- (2) Reply and/or issue fee;
- (3) Terminal disclaimer with disclaimer fee - required for all utility and plant applications filed before June 8, 1995; and for all design applications; and
- (4) Statement that the entire delay was unintentional.

**1. Petition fee**

- ☐ Small entity-fee \$ \_\_\_\_\_ (37 CFR 1.17(m)). Applicant claims small entity status. See 37 CFR 1.27.
- ☒ Other than small entity - fee \$ 1500.00 (37 CFR 1.17(m))

**2. Reply and/or fee**

A. The reply and/or fee to the above-noted Office action in the form of an Amendment (identify type of reply):

- ☐ has been filed previously on \_\_\_\_\_.
- ☒ is enclosed herewith.

B. The issue fee and publication fee (if applicable) of \$ \_\_\_\_\_.

- ☐ has been paid previously on \_\_\_\_\_.
- ☐ is enclosed herewith.

[Page 1 of 2]

This collection of information is required by 37 CFR 1.137(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### 3. Terminal disclaimer with disclaimer fee

☒ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ \_\_\_\_\_ for a small entity or \$ \_\_\_\_\_ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(b) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

### WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

\_\_\_\_\_  
Signature

2/2/07  
Date

Steve Cha

44,069

Typed or printed name

Registration Number, if applicable

CHA & REITER, LLC

210 Route 4 East, Suite #103

(201) 226-9245

Address

Telephone Number

Paramus, New Jersey 07652

Address

Enclosures: ☒ Fee Payment

☒ Reply

☐ Terminal Disclaimer Form

☒ Additional sheets containing statements establishing unintentional delay

☐ Other: \_\_\_\_\_

### CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

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☐ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

February 7, 2007

Date

\_\_\_\_\_  
Signature

Steve Cha

Typed or printed name of person signing certificate



Atty. Docket: 5000-1-363

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First named Inventor: Sung-Kee Kim

Patent Application No.: 10/600,685

Filed: June 20, 2003

Title: DUOBINARY OPTICAL TRANSMISSION APPARATUS AND METHOD THEREOF

Attention: Office of Petitions  
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Commissioner for patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

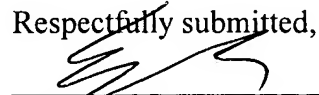
**STATEMENT ESTABLISHING UNINTENTIONALLY DELAY**

Applicants hereby petitions for revival of the abandoned patent application.

A response to an Office Action was filed timely on September 29, 2006, but the cover page of the Office Action response contained an incorrect serial number and title. A result of this clerical error caused the abandonment, and thus was unintentional.

A copy of response bearing correct serial no. is enclosed herein.

Respectfully submitted,

  
\_\_\_\_\_  
Steve S. Cha  
Attorney for Applicant  
Registration No. 44,069

CHA & REITER  
210 Route 4 East, #103  
Paramus, NJ 07652  
(201) 226-9245

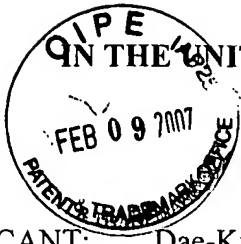
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Steve S. Cha, Reg. No. 44,069  
Name of Registered Rep.)

 2/7/07  
(Signature and Date)



APPLICANT: Dae-Kwang Jung, *et al.*

Incorrect

SERIAL NO.: [10/600,694]

EXAMINER: Kenneth J. Malkowski

FILED: June 20, 2003

ART UNIT: 2613

Incorrect

FOR:

[PASSIVE OPTICAL NETWORK SYSTEM PROVIDING  
SIMULTANEOUSLY BOTH BROADCASTING SERVICE AND DATA  
SERVICE]

AMENDMENT

Mail Stop Amendment  
Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated July 13, 2006, Applicant hereby requests amendment of the above-identified application as follows.

**IN THE CLAIMS**

1. (Currently Amended) A duobinary optical transmission apparatus comprising:

a light source arranged to output an optical carrier;

an NRZ optical signal generator arranged to receive an NRZ electrical signal, to modulate the optical carrier into an NRZ optical signal according to the NRZ electrical signal, and to output the NRZ optical signal to a node O; and

a duobinary optical signal generator, including a light phase modulator, said duobinary optical signal generator arranged to receive the precoded NRZ electrical signal and to modulate the NRZ optical signal and outputs the modulated signal into a duobinary optical signal, wherein the NRZ optical signal generator and the duobinary signal generator are configured so that each bit of the NRZ optical signal at node O, the light phase modulator shifts the phase of the optical signals from 0 to  $\pi$  or from  $\pi$  to 0 so that bits of '1' located at both sides of each bit of '0' have different phases from each other.

2. (Original) The duobinary optical transmission apparatus as claimed in claim 1, wherein the NRZ optical signal generator includes:

a plurality of first modulator driving amplifiers that amplify and output the NRZ electrical signal; and

a light intensity modulator that modulates an intensity of the optical carrier according to driving signals input from the first modulator driving amplifiers.

3. (Currently Amended) The duobinary optical transmission apparatus as claimed in claim 1, wherein the duobinary optical signal generator includes:

a precoder arranged to encode the NRZ electrical signal;  
a plurality of second modulator driving amplifiers that amplify and output the encoded signal; and  
| wherein the a light phase modulator ~~that~~ modulates a phase of the NRZ optical signal according to driving signals input from the second modulator driving amplifiers.

4. (Original) The duobinary optical transmission apparatus as claimed in claim 2, wherein the light intensity modulator is a Mach-Zehnder interference type modulator.

5. (Original) A duobinary optical transmission apparatus as claimed in claim 4, wherein the Mach-Zehnder interference type modulator is a dual armed Z-cut Mach-Zehnder interference type light intensity modulator.

6. (Original) The duobinary optical transmission apparatus as claimed in claim 4, wherein the Mach-Zehnder interference type modulator is a single armed X-cut type Mach-Zehnder interference type light intensity modulators

7. (Currently Amended) The duobinary optical transmission apparatus as claimed in claim 13, wherein the light phase modulator is a Mach-Zehnder interference type modulator.

8. (Original)) The duobinary optical transmission apparatus as claimed in claim 7, wherein the Mach-Zehnder interference type modulator is a dual armed Z-cut Mach-Zehnder interference type light intensity modulator.

9. (Original) The duobinary optical transmission apparatus as claimed in claim 7, wherein the Mach-Zehnder interference type modulator is a single armed X-cut type Mach-Zehnder interference type light intensity modulators

10. (Currently Amended) The duobinary optical transmission apparatus as claimed in claim 2, wherein the duobinary optical signal generator includes:

a precoder arranged to encode the NRZ electrical signal;

a plurality of second modulator driving amplifiers that amplify and output the encoded signal; and

wherein thea light phase modulator that modulates a phase of the NRZ optical signal according to driving signals input from the second modulator driving amplifiers.

11. (Original) The duobinary optical transmission apparatus as claimed in claim 1, wherein the NRZ electrical signal is generated by a pulse pattern generator

12. (Currently Amended) A method for outputting a duobinary optical signal, comprising the steps of:

outputting an optical carrier signal;

receiving an NRZ electrical signal;

modulating the optical carrier into an NRZ optical signal according to the NRZ

electrical signal, and to output the NRZ optical signal to a node O; and

modulating, via a light phase modulator, the NRZ optical signal into a duobinary optical signal, wherein the NRZ optical signal generator and the duobinary signal generator are configured so that each bit of the NRZ optical signal at node O, the light phase modulator shifts the phase of the optical signals from 0 to  $\pi$  or from  $\pi$  to 0 so that bits of '1' located at both sides of each bit of '0' have different phases from each other.

13. (Original) The method as claimed in claim 12, further comprising the step of outputting the duobinary optical signal to an optical fiber.

14. (Original) The method as claimed in claim 12, further comprising the step of changing a dispersion factor of the optical fiber by adjusting an extinction ratio and a chirp variable of the modulator.



### REMARKS

Claims 1-14 are pending in the application. Claims 1-14 are rejected. Claims 1, 3, 7, 10 and 12 have been amended. Claims 1 and 12 are independent claims. Reconsideration of the above referenced application is respectfully requested based upon the amendments to the base claims and comments below.

The drawings have been objected to for failing to show an 'X-cut type Mach-Zehnder interference type light intensity modulator.' Applicant notes that the boilerplate "the drawings must show every feature of the invention specified in the claims" is in fact, incorrect, as the USPTO issues patents without any drawings all the time. Before one applies 37 C.F.R. §1.83, one must read 37 C.F.R. §1.81(a) which states:

(a) The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented... (Emphasis added).

In the present case, it is not believed that a person of ordinary skill in the art would need to see drawings of an X-cut type Mach-Zehnder interference type light intensity modulator to understand one embodiment of the present invention. Therefore, withdraw of the object to the drawings and the rejection of dependent claims is respectfully requested.

Claims 1 is rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement. In response, applicants have amended the base claim to provide antecedent basis to 'a precoded NRZ optical signal.' No new matter was added.

Claim 1 and 12 have been amended to disclose that the NRZ optical signal generator and the duobinary signal generator are configured so that each bit of the NRZ optical signal at a node O is light phase modulated, where said modulator shifts the phase of the optical signals from 0 to  $\pi$  or from  $\pi$  to 0 so that bits of '1' located at both sides of each bit of '0' have different phases

from each other. In addition, dependent claims 3 and 10 have been amended to reflect proper antecedent basis. Support for this amendment is found in the specification Page 10 line 20 – 22 and page 11, line 1. No new matter was added.

Claim 1-13 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by Ono (US 6,388,786). In response, applicants have amended the base claim to disclose features not shown in the prior art reference Ono and provide the following comments.

Claims 1, as amended now recites, a duobinary optical transmission apparatus, comprising, inter alia, an NRZ optical signal generator arranged to receive an NRZ electrical signal, to modulate the optical carrier into an NRZ optical signal according to the NRZ electrical signal, and to output the NRZ optical signal **to a node O** ; and a duobinary optical signal generator ..., **wherein the NRZ optical signal generator and the duobinary signal generator are configured so that each bit of the NRZ optical signal at node O, the light phase modulator shifts the phase of the optical signals from 0 to  $\pi$  or from  $\pi$  to 0 so that bits of '1' located at both sides of each bit of '0' have different phases from each other.** Similarly, claim 12 discloses a method for doing the same.

In contrast, Ono provides a method of generating a duobinary signal where an electric signal drives an optical modulator and is binary (Col. 2, line 44 to 46). Applicants understanding of Ono is that that reference merely discloses that the duobinary signals are phase modulated and inverted when the intensity modulation signal is '0' (Col. 4, line 46 – 49). On the other hand, the present invention provides an improvement over the prior art specifically related to the deterioration in output signals caused by lengths of a pseudo random bit sequence (PRBS), inter alia and found that in the prior art . . . "[i]n general, the slope of a signal that is converted from level 0 into level 1 is different from the slope of a signal that is converted from level 1 into

level 0" (Page 4 line 16-22 and page 5 1-2). Moreover, the solves the problem found in the prior art where parts of the signal having different slopes overlap by having bits of '1' located at both sides of each bit of '0' have different phases from each other as disclosed in the amended claims (Page 4, line 16-22 to Page 5 line 1-2).

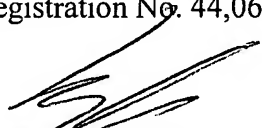
Therefore, Ono fails to anticipate the present invention by failing to show a feature disclosed in the base claims, wherein the NRZ optical signal generator and the duobinary signal generator are configured so that each bit of the NRZ optical signal at node O, the light phase modulator shifts the phase of the optical signals from 0 to  $\pi$  or from  $\pi$  to 0 so that bits of '1' located at both sides of each bit of '0' have different phases from each other. Applicants respectfully request withdrawal of this ground of rejection.

The other claims in this application are each dependent from the independent claim discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

For all the foregoing reasons, it is respectfully submitted that all of the present claims are patentable in view of the cited reference. A Notice of Allowance is respectfully requested.

Respectfully submitted,

Steve Cha  
Registration No. 44,069

  
By: Steve Cha  
Attorney for Applicant  
Registration No. 44,069

Date:

9-29-06


Mail all correspondence to:

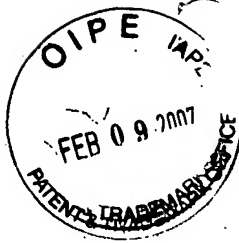
Steve Cha, Registration No. 44,069  
Cha & Reiter  
210 Route 4 East, #103  
Paramus, NJ 07652  
Tel: 201-226-9245  
Fax: 201-226-9246

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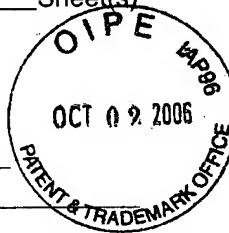
Steve Cha, Reg. No. 44,069  
(Name of Registered Rep.)

  
(Signature and Date)



Serial No. 10/600,685 Docket No. 5000-1-363 Div. \_\_\_\_\_  
Title PASSIVE OPTICAL NETWORK SYSTEM PROVIDING...  
In the Application of Dae-Kwang Jung et al.  
the following papers have been received by the Patent and Trademark Office, as indicated by the date stamped hereon:

- |   |   |                                   |
|---|---|-----------------------------------|
| <input type="checkbox"/> Application For Patent | <input checked="" type="checkbox"/> Amendment   | <input type="checkbox"/> Response |
| _____ pages of spec., claims & abs.             | <input type="checkbox"/> Extension of Time      |                                   |
| <input type="checkbox"/> Declaration            | <input type="checkbox"/> Issue Fee              |                                   |
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| _____ Sheet(s)                                  | <input type="checkbox"/> 8 & 15 Declaration     |                                   |
| <input type="checkbox"/> Assignment             | <input type="checkbox"/> Renewal Application    |                                   |
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